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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/915,939	SINGH, AMIT P.	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-96* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,24-25, 28-36, 42-56, 63-68, 71-76, 80-81, 85-89, 93-95* is/are rejected.

7)☒ Claim(s) *17-23,26,27,37-41,57-62,69,70,77-79,82-84,90-92 and 96* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4,5,6,7*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 42-43, 45-56, 63-65, 72-76, 85-89 are rejected under 35 U.S.C. 102(b) as being anticipated by Seitz (5,377,329).

Regarding claims 42 and 85, Seitz discloses a system for decoding one or more repetitive data blocks in data communicated over a network comprising:

a decoder module (decoder, element 28, Fig. 1) being coupled in the network (multiple-access communication network, Fig. 1), the decoder module receiving data blocks for different communication sessions from a corresponding encoder module (decoder receiving encoding datagroup which is a mix of different types of data, col. 4, lines 20-28); and

a memory accessible to the decoder module for storing the contents of one or more data blocks previously received from the corresponding encoder module (receiver storing data in receiver cache, col. 1, lined 24-36) wherein the decoder module determines whether the contents of each of the received data blocks is in encoded form (receiver interprets flags in the transmitted data stream from the sender, col. 2, lines 38-44),

wherein responsive to the respective data block being in encoded form (when flags is interpreted at the receiver), the decoder module selects the contents of a matching previously received block as the contents for the respective encoded block (receiver extract information

from the receiver cache, col. 1, lines 24-36, col. 2, lines 38-44), and responsive to the data block being unencoded (for raw data received), the decoder module stores the contents of the respective received data block as a previously received data block (store raw data into the receiver cache, col. 1, lines 24-36, col. 2, lines 38-44).

Regarding claim 43, Seitz discloses the system of claim 42 wherein the decoder module (decoder, element 28, Fig. 1) is coupled via a switch (receiver, Fig. 1) in a physical connection between two nodes of the network (a sender node and a receiver node, Fig. 1), responsive to a first configuration of the switch (if there is match between previously cached data with future data), the encoder module processing data that traverse the physical connection between these two nodes (a flag and token representing the data is transmitted to the receiver), and responsive to a second configuration of the switch, the data bypassing the encoder module (if there is no match, actual raw data is transmitted to the receiver instead, col. 2, lines 27-37)

Regarding claim 45, Seitz discloses the system of claim 42 wherein the decoder module receives an indicator (a flag and token, col. 2, lines 27-37) for identifying that the contents of at least one encoded data block have been previously transmitted to the decoder module (representing the data that have been previously transmitted or cached, col. 2, lines 27-37).

Regarding claim 46, Seitz discloses the system of claim 45 wherein the indicator is a special symbol (a flag, col. 2, lines 27-37).

Regarding claim 47, Seitz discloses the system of claim 45 wherein the indicator is an extra header (a token, col. 2, lines 27-37).

Regarding claim 48, Seitz discloses the system of claim 42 wherein at least one respective data block is a packet payload (entire sequence of information, col. 2, lines 27-37).

Regarding claim 49, Seitz discloses the system of claim 42 wherein at least one respective data block is a portion of a packet payload (partial sequences of information, col. 2, lines 27-37).

Regarding claim 50, Seitz discloses the system of claim 42 wherein the decoder module decodes at least one encoded data block using a synchronization mechanism (sequence number stored with the data will be duplicated on both the sender side and the receiver side) for verifying the identification of the one or more previously transmitted data blocks with the at least one corresponding decoder module supporting the destination address of the extracted data block (to make the sequence number on both sides are in sync, col. 3, lines 65-68 and col. 4, lines 1-6).

Regarding claim 51, Seitz discloses the system of claim 50 wherein the synchronization mechanism is an explicit synchronization mechanism (using different cache sizes for sender and receiver when performing synchronization, col. 2, lines 45-56).

Regarding claim 52, Seitz discloses the system of claim 50 wherein the synchronization mechanism is an implicit synchronization mechanism (maintain identical size caches using a reliable transmission service, col. 2, lines 45-56).

Regarding claim 53, Seitz discloses the system of claim 52 wherein the implicit synchronization mechanism is a reliable network transport protocol (maintain identical caches using a reliable transmission service, col. 2, lines 45-56).

Regarding claim 54, Seitz discloses the system of claim 50 wherein the synchronization mechanism is a reliable network transport protocol (maintain identical caches using a reliable transmission service, col. 2, lines 45-56).

Regarding claim 55, Seitz discloses the system of claim 42 wherein responsive to the data block being unencoded, the decoder module stores the contents of the respective received data block as a previously received data block further comprises determining whether to delete at least one of the previously received data blocks (if there is not enough room to insert an entry, items are removed until enough space exists, col. 3, lines 49-55).

Regarding claim 56, Seitz discloses the system of claim 42 wherein the memory stores the previously received data blocks in a least recently used data structure for storing one or more previously received unique data blocks (flags and tokens are interpreted, col. 2, lines 38-44), said least recently used data structure having a maximum capacity (cache is full) and each of the

previously transmitted unique data blocks having a unique identifier (each data item has an associated sequence number for indexing) and a position in an order of most recently used to least recently used of the one or more stored blocks (a new sequence number is generated by adding one to the previous one, col. 4, lines 1-6).

Regarding claim 63, Seitz discloses the system of claim 42 wherein the system further comprises a decapsulation module for decapsulating a block of data received (use data directly from the transmitted data stream) over the network from a source address supported by a corresponding encoder module (a source field, col. 6, lines 3-17).

Regarding claim 64, Seitz discloses the system of claim 63 wherein the received data block is included in a packet (packet, col. 2, lines 27-37), and the packet has been decapsulated as one packet (a packet comprising flag and token, col. 2, lines 27-37).

Regarding claim 65, Seitz discloses the system of claim 63 wherein the received data block is included in a packet (packet of token and flag) and the packet has been decapsulated with at least one other packet (packets of raw data) in an outgoing packet transmitted (in the sender's transmitted data stream) from a source address supported by a corresponding encoder module (a source field, col. 6, lines 3-17).

Regarding claim 72, Seitz discloses a method for encoding one or more repetitive data blocks in data communicated over a network comprising:

an encoder module (encoder, element 18, Fig. 1), coupled in the network (multiple-access communication network comprising a sender, a receiver and a communication link, elements 10, 20, 30, Fig. 1), the encoder module intercepting the data (encoder is intercepting data from the disassembly unit 12, Fig. 1), the encoder module extracting data blocks from different communication sessions from the intercepted data (encoding contains a encoding datagroup which is a mix of different types of data, col. 4, lines 20-28); and

a memory (a cache), accessible to the encoder module, for storing the contents of one or more data blocks previously transmitted by the encoder module (for caching for a specified amount of information from a previous input data stream, col. 2, lines 27-37) wherein the encoder module determines whether there is a match between the contents of each of the extracted data blocks (future data) and the contents of at least one previously transmitted data block (checks future data against previously stored data to see if there is a match, col. 2, lines 27-37),

wherein responsive to said match (if matches are found), the encoder module encodes the respective extracted data block (a flag and token) and transmits the respective extracted data block in encoded form (a flag and token representing the data) to the at least one corresponding decoder module (a flag and token representing that data is input into the data stream instead of the actual data, col. 2, lines 27-37), and responsive to no match, the encoder module transmits the respective extracted data block in intercepted form to the at least one corresponding decoder module (actual raw data is sent to the receiver if no match is found, col. 2, lines 27-37).

Regarding claim 73, Seitz discloses the method of claim 72 further comprising responsive to a match in contents, transmitting an indicator (if there is a match, transmits a flag and token) for identifying that the contents of a respective data block have been previously transmitted (representing the data that have been previously transmitted or cached, col. 2, lines 27-37).

Regarding claim 74, Seitz discloses the method of claim 72 further comprising synchronizing the identification of the one or more previously transmitted data blocks (sequence number of the previously stored data, col. 2, lines 27-37) with at least one corresponding decoder module supporting the destination address of the extracted data block (to make the sequence number on both sides are in sync, col. 3, lines 65-68 and col. 4, lines 1-6).

Regarding claim 75, Seitz discloses the method of claim 72 further comprising, responsive to no match between the contents of the respective extracted data block and the contents of at least one of the previously transmitted blocks (when no match is found, a new data item is inserted or cached, col. 2, lines 27-37), determining whether to delete at least one of the previously transmitted data blocks in the memory, and storing the respective extracted data block in intercepted form in the memory (if there is not enough room to insert an entry, items are removed until enough space exists, col. 3, lines 49-55).

Regarding claim 76, Seitz discloses the method of claim 72 wherein storing the contents of one or more data blocks previously transmitted comprises storing one or more previously

transmitted unique data blocks (flags and tokens are interpreted, col. 2, lines 38-44), said least recently used data structure having a maximum capacity (cache is full) and each of the previously transmitted unique data blocks having a unique identifier (each data item has an associated sequence number for indexing) and a position in an order of most recently used to least recently used of the one or more stored blocks (a new sequence number is generated by adding one to the previous one, col. 4, lines 1-6).

Regarding claim 86, Seitz discloses the method of claim 85 further comprising receiving an indicator (a flag and token, col. 2, lines 27-37) for identifying that the contents of at least one encoded data block have been previously transmitted to the decoder module (representing the data that have been previously transmitted or cached, col. 2, lines 27-37).

Regarding claim 87, Seitz discloses the method of claim 85 further comprising the identification of the one or more previously received data blocks from a corresponding encoder module (a flag and token, col. 2, lines 27-37).

Regarding claim 88, Seitz discloses the method of claim 85 further comprising responsive to the data block being unencoded, storing the contents of the respective received data block as a previously received data block further comprises determining whether to delete at least one of the previously received data blocks (if there is not enough room to insert an entry, items are removed until enough space exists, col. 3, lines 49-55).

Regarding claim 89, Seitz discloses the method of claim 85 wherein storing the previously received data blocks further comprises storing one or more previously received unique data blocks (flags and tokens are interpreted, col. 2, lines 38-44), said least recently used data structure having a maximum capacity (cache is full) and each of the previously transmitted unique data blocks having a unique identifier (each data item has an associated sequence number for indexing) and a position in an order of most recently used to least recently used of the one or more stored blocks (a new sequence number is generated by adding one to the previous one, col. 4, lines 1-6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-4, 6-16, 24, 28-31, 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seitz (USP 5,377,329).

Regarding claim 2, Seitz discloses a system for encoding one or more repetitive data blocks in data communicated over a network comprising:

an encoder module (encoder, element 18, Fig. 1), coupled in the network (multiple-access communication network comprising a sender, a receiver and a communication link, elements 10, 20, 30, Fig. 1), the encoder module intercepting the data (encoder is intercepting data from the disassembly unit 12, Fig. 1), the encoder module extracting data blocks from different

communication sessions from the intercepted data (encoding contains a encoding datagroup which is a mix of different types of data, col. 4, lines 20-28); and

a memory (a cache), accessible to the encoder module, for storing the contents of one or more data blocks previously transmitted by the encoder module (for caching for a specified amount of information from a previous input data stream, col. 2, lines 27-37) wherein the encoder module determines whether there is a match between the contents of each of the extracted data blocks (future data) and the contents of at least one previously transmitted data block (checks future data against previously stored data to see if there is a match, col. 2, lines 27-37),

wherein responsive to said match (if matches are found), the encoder module encodes the respective extracted data block (a flag and token) and transmits the respective extracted data block in encoded form (a flag and token representing the data) to the at least one corresponding decoder module (a flag and token representing that data is input into the data stream instead of the actual data, col. 2, lines 27-37), and responsive to no match, the encoder module transmits the respective extracted data block in intercepted form to the at least one corresponding decoder module (actual raw data is sent to the receiver if no match is found, col. 2, lines 27-37).

each extracted block having a destination address supported for decoding by at least one corresponding decoder module (datagroup flag for decoding and the datagroup flag contains destination field, col. 6, lines 1-7).

Seitz does not explicitly disclose the encoder module passing through data not having a supported destination address.

However, Seitz teaches matching data by recognizing entire packet or packet header and transmitting raw data when no match is found between previously stored data and future data.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz such that the sequence of information to be recognized during the matching process is the destination address of the packet and that raw data is transmitted when no match is found based on the previous destination address stored. The motivation to do so is to reduce the amount of data to be transmitted by eliminating data transmission redundancy and increase the apparent rate of transfer.

Regarding claim 3, Seitz discloses the system of claim 2 wherein the encoded form of the respective extracted data block is transparent to one or more nodes in the network (if flag is not found at receiver, no corresponding data is stored in the receiver cache, which is considered as meaning the encapsulation is transparent to the receiver, col. 1, lines 24-36, co. 2, lines 38-44).

Regarding claim 4, Seitz discloses the system of claim 2 wherein the encoder module (encoder, element 18, Fig. 1) is coupled via a switch (a sender, Fig. 1) in a physical connection between two nodes of the network (a sender node and a receiver of the communication network, Fig. 1), responsive to a first configuration of the switch (if there is match between previously cached data with future data), the encoder module processing data that traverse the physical connection between these two nodes (a flag and token representing the data is transmitted to the receiver), and responsive to a second configuration of the switch, the data bypassing the encoder

module (if there is no match, actual raw data is transmitted to the receiver instead, col. 2, lines 27-37).

Regarding claim 6, Seitz discloses the system of claim 2 wherein the encoder module, responsive to a match in contents, transmits an indicator (if there is a match, transmits a flag and token), identifying that the contents of a respective data block have been previously transmitted (representing the data that have been previously transmitted or cached, col. 2, lines 27-37).

Regarding claim 7, Seitz discloses the system of claim 6 wherein the indicator is a special symbol (a flag, col. 2, lines 27-37).

Regarding claim 8, Seitz discloses the system of claim 6 wherein the indicator is an extra header (a token, col. 2, lines 27-37).

Regarding claim 9, Seitz discloses the system of claim 2 wherein at least one respective data block is a packet payload (entire sequence of information, col. 2, lines 27-37).

Regarding claim 10, Seitz discloses the system of claim 2 wherein at least one respective data block is a portion of a packet payload (partial sequences of information, col. 2, lines 27-37).

Regarding claim 11, Seitz discloses the system of claim 2 wherein the encoder module encodes at least one extracted data block using a synchronization mechanism (sequence number

stored with the data will be duplicated on both the sender side and the receiver side) for verifying the identification of the one or more previously transmitted data blocks with the at least one corresponding decoder module supporting the destination address of the extracted data block (to make the sequence number on both sides are in sync, col. 3, lines 65-68 and col. 4, lines 1-6).

Regarding claim 12, Seitz discloses the system of claim 11 wherein the synchronization mechanism is an explicit synchronization mechanism (using different cache sizes for sender and receiver when performing synchronization, col. 2, lines 45-56).

Regarding claim l3, Seitz discloses the system of claim 11 wherein the synchronization mechanism is an implicit synchronization mechanism (maintain identical size caches using a reliable transmission service, col. 2, lines 45-56).

Regarding claim 14, Seitz discloses the system of claim 11 wherein the implicit synchronization mechanism is a reliable network transport protocol (maintain identical caches using a reliable transmission service, col. 2, lines 45-56).

Regarding claim 15, Seitz discloses the system of claim 2 further comprising the encoder module, responsive to no match between the contents of the respective extracted data block and the contents of at least one of the previously transmitted blocks (when no match is found, a new data item is inserted or cached, col. 2, lines 27-37), determining whether to delete at least one of the previously transmitted data blocks in the memory, and storing the respective extracted data

block in intercepted form in the memory (if there is not enough room to insert an entry, items are removed until enough space exists, col. 3, lines 49-55).

Regarding claim 16, Seitz discloses the system of claim 2 wherein the memory comprises a least recently used data structure for storing one or more previously transmitted unique data blocks (flags and tokens are interpreted, col. 2, lines 38-44), said least recently used data structure having a maximum capacity (cache is full) and each of the previously transmitted unique data blocks having a unique identifier (each data item has an associated sequence number for indexing) and a position in an order of most recently used to least recently used of the one or more stored blocks (a new sequence number is generated by adding one to the previous one, col. 4, lines 1-6).

Regarding claim 24, Seitz discloses the system of claim 2 wherein the memory stores a data structure for associating a signature with one or more of the previously transmitted data blocks (associate sequence number with stored data, col. 2, lines 7-16, 27-37), and wherein the encoder module computes a signature for the respective extracted data block (sequence number is generated), compares the computed signature with at least one signature associated with the one or more previously transmitted data blocks (compares sequence number), and responsive to a match in signature (if there is a match), selecting the one or more previously transmitted data blocks having the match in signature for content comparison with the respective extracted data block (selecting data from cache having the matched sequence number, col. 2, lines 27-37, 66-68, col. 3, lines 1-5).

Regarding claim 28, Seitz discloses the system of claim 2 further comprising an encapsulation module for encapsulating the extracted data blocks for transport over the network (token, flag and raw data are transmitted are mixed in transmitted data stream, col. 2, lines 27-37).

Regarding claim 29, Seitz discloses the system of claim 28 wherein at least one of the extracted data blocks is included in a packet, and the packet is encapsulated as one packet (flag and token are considered as one packet, col. 2, lines 27-37).

Regarding claim 30, Seitz discloses the system of claim 28 wherein at least one of the extracted data blocks is included in a packet (a flag and a token is considered as one packet) and the packet is encapsulated with at least one other packet (raw data is considered as another packet) in an outgoing packet for transmission (col. 2, lines 27-37).

Regarding claim 31, Seitz discloses the system of claim 28 wherein the encapsulation of at least one of the extracted data blocks is transparent to one or more nodes in the network (if flag is not found at receiver, no corresponding data is stored in the receiver cache, which is considered as meaning the encapsulation is transparent to the receiver, col. 1, lines 24-36, co. 2, lines 38-44).

Regarding claim 71, Seitz discloses a system for decreasing one or more repetitive data blocks in data communicated over a network comprising:

an encoder module (encoder, element 18, Fig. 1), coupled in the network (multiple-access communication network comprising a sender, a receiver and a communication link, elements 10, 20, 30, Fig. 1), the encoder module intercepting the data (encoder is intercepting data from the disassembly unit 12, Fig. 1), the encoder module extracting data blocks from different communication sessions from the intercepted data (encoding contains a encoding datagroup which is a mix of different types of data, col. 4, lines 20-28); and

a memory (a cache), accessible to the encoder module, for storing the contents of one or more data blocks previously transmitted by the encoder module (for caching for a specified amount of information from a previous input data stream, col. 2, lines 27-37) wherein the encoder module determines whether there is a match between the contents of each of the extracted data blocks (future data) and the contents of at least one previously transmitted data block (checks future data against previously stored data to see if there is a match, col. 2, lines 27-37),

wherein responsive to said match (if matches are found), the encoder module encodes the respective extracted data block (a flag and token) and transmits the respective extracted data block in encoded form (a flag and token representing the data) to the at least one corresponding decoder module (a flag and token representing that data is input into the data stream instead of the actual data, col. 2, lines 27-37), and responsive to no match, the encoder module transmits the respective extracted data block in intercepted form to the at least one corresponding decoder module (actual raw data is sent to the receiver if no match is found, col. 2, lines 27-37).

each extracted block having a destination address supported for decoding by at least one corresponding decoder module (datagroup flag for decoding and the datagroup flag contains destination field, col. 6, lines 1-7).

a decoder module (decoder, element 28, Fig. 1) being coupled in the network (multiple-access communication network, Fig. 1), the decoder module receiving data blocks for different communication sessions from a corresponding encoder module (decoder receiving encoding datagroup which is a mix of different types of data, col. 4, lines 20-28); and

a memory accessible to the decoder module for storing the contents of one or more data blocks previously received from the corresponding encoder module (receiver storing data in receiver cache, col. 1, lined 24-36) wherein the decoder module determines whether the contents of each of the received data blocks is in encoded form (receiver interprets flags in the transmitted data stream from the sender, col. 2, lines 38-44),

wherein responsive to the respective data block being in encoded form (when flags is interpreted at the receiver), the decoder module selects the contents of a matching previously received block as the contents for the respective encoded block (receiver extract information from the receiver cache, col. 1, lines 24-36, col. 2, lines 38-44), and responsive to the data block being unencoded (for raw data received), the decoder module stores the contents of the respective received data block as a previously received data block (store raw data into the receiver cache, col. 1, lines 24-36, col. 2, lines 38-44).

Seitz does not explicitly disclose the encoder module passing through data not having a supported destination address.

However, Seitz teaches matching data by recognizing entire packet or packet header and transmitting raw data when no match is found between previously stored data and future data. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz such that the sequence of information to be recognized during the matching process is the destination address of the packet and that raw data is transmitted when no match is found based on the previous destination address stored. The motivation to do so is to reduce the amount of data to be transmitted by eliminating data transmission redundancy and increase the apparent rate of transfer.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seitz (USP 5,377,329) in view of Birdwell (US Publication 2005/0105506).

Regarding claim 5, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 2 above. Seitz also discloses the system of claim 2 wherein the encoder module operates in a node in the network (encoder operates in a sender node in a multiple access communication network, col. 1, lines 65-68, col. 2, lines 1-6 and Fig. 1). Seitz does not explicitly disclose the encoder deciding a route for the respective extracted data block to the at least one corresponding decoder module supporting its destination address. However, Birdwell discloses a multi-packet encoder is being used as an encoder and router to encode and route IP packets (IP packets comprise IP destination address header information, paragraphs 0016, 0028, 0031, 00383399) to a decoder for decoding. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Birdwell such that the encoder of Seitz deciding a route for the

respective extracted data block to the at least one corresponding decoder module supporting its destination address. The motivation to do so is to use the IP addressing information to deliver the data from source to destination.

4. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seitz (USP 5,377,329) in view of Graybill et al. (USP 5,371,499).

Regarding claim 25, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 24 above, except fails to disclose the system of claim 24 wherein the data structure for associating a signature with one or more of the previously transmitted data blocks is a hash table having one or more bins.

However, Graybill discloses hashing tables with hask keys to reference strings of data during string matching (col. 5, lines 3-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Graybill in using hashing table for associating a hashed key to associate with a string of data such that the data structure for associating a signature with one or more of the previously transmitted data blocks in Seitz is a hash table having one or more bins (hash keys). The motivation to do so is a high ratio and a high rate of data compression will be achieved.

5. Claims 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seitz (USP 5,377,329) in view of Gorman et al. (USP 5,394,879).

Regarding claim 32, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 28 above, except fails to disclose the system of claim 28 wherein the encapsulation module comprises a timer mechanism for ensuring that the at least one extracted data block is held in a buffer coupled to the encapsulation module for no more than a pre-determined maximum time before being transmitted.

However, Gorman discloses using a timer to trigger the transmission of digital encoded signal (col. 14, lines 10-18, Fig. 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Gorman such that a timer mechanism is used in the encoding method of Seitz for ensuring that the at least one extracted data block is held in a buffer coupled to the encapsulation module for no more than a pre-determined maximum time before being transmitted. The motivation to do so is to enable error detection and correction of the encoded digital signal prior to its transmission to a receiver unit.

Regarding claim 33, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 30 above, except fails to disclose the system of claim 30 wherein the encapsulation module comprises a timer mechanism for ensuring that the at least one extracted data block is held in a buffer coupled to the encapsulation module for no more than a pre-determined maximum time before being transmitted. However, Gorman discloses using a timer to trigger the transmission of digital encoded signal (col. 14, lines 10-18, Fig. 6). Therefore, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Gorman such that a timer mechanism is used in the encoding method of Seitz for ensuring that the at least one extracted data block is held in a buffer coupled to the encapsulation module for no more than a pre-determined maximum time before being transmitted. The motivation to do so is to enable error detection and correction of the encoded digital signal prior to its transmission to a receiver unit.

6. Claims 34-36, 66-68, 80-81, 93-95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seitz (USP 5,377,329) in view of Alkhatib (US Publication 2002/0184390).

Regarding claim 34, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 28 above, except fails to disclose the system of claim 28 wherein the encoder module encodes at least one data block at a first layer of a model describing the flow of data across a network and the encapsulation module encapsulates the at least one extracted data block at a second layer of the model. However, Alkhatib discloses encoding a data packet in a TCP segment and encapsulating IP packets using the UDP layer (first layer and second layer, paragraphs 0014, 0049). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Alkhatib in using TCP and UDP to encode and encapsulate packets, respectively such that the encoder module encodes at least one data block at a first layer of a model and the at least one extracted data block is encapsulated at a second layer of the model. The motivation to do so is to use TCP to handle flow control to make sure a faster sender cannot swamp a slow receiver and to use UDP to deliver prompt packet delivery.

Regarding claim 35, Alkhatib discloses the system of claim 34 wherein the first and second layers are at the same layer of the model (TCP and UDP are at the same layer of the TCP/IP reference model, paragraphs 0014, 0049).

Regarding claim 36, Alkhatib discloses the system of claim 35 wherein one of the layers is a connection-oriented layer (TCP is a connection-oriented layer, paragraph 0014) and the other layer is a connectionless layer (UDP is a connectionless layer, paragraph 0049).

Regarding claim 66, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 63 above, except fails to disclose the system of claim 63 wherein the decapsulation module decapsulates the received block of data at a first layer of a model describing the flow of data across a network and the decoder module decodes the received block of data at a second layer of the model. However, Alkhatib discloses encoding a data packet in a TCP segment and encapsulating IP packets using the UDP layer (first layer and second layer, paragraphs 0014, 0049). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Alkhatib in using TCP and UDP to decode and decapsulate packets, respectively such that the decoder module decodes at least one data block at a first layer of a model and the at least one extracted data block is decapsulated at a second layer of the model. The motivation to do so is to use TCP to handle flow control to make sure a faster sender cannot swamp a slow receiver and to use UDP to deliver prompt packet delivery.

Regarding claim 67, Alkhatib discloses the system of claim 66 wherein the first layer and the second layer are the same layer (TCP and UDP are at the same layer of the TCP/IP reference model, paragraphs 0014, 0049).

Regarding claim 68, Alkhatib discloses the system of claim 66 wherein one of the layers is a connection-oriented layer (TCP is a connection-oriented layer, paragraph 0014) and the other layer is a connectionless layer (UDP is a connectionless layer, paragraph 0049).

Regarding claim 80, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 79 above, except fails to disclose the method of claim 79 further comprising encoding at least one data block at a first layer of a model describing the flow of data across a network and the encapsulating the at least one extracted data block at a second layer of the model. However, Alkhatib discloses encoding a data packet in a TCP segment and encapsulating IP packets using the UDP layer (first layer and second layer, paragraphs 0014, 0049). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Alkhatib in using TCP and UDP to decode and decapsulate packets, respectively such that the decoder module decodes at least one data block at a first layer of a model and the at least one extracted data block is decapsulated at a second layer of the model. The motivation to do so is to use TCP to handle flow control to make sure a faster sender cannot swamp a slow receiver and to use UDP to deliver prompt packet delivery.

Regarding claim 81, Alkhatib discloses the method of claim 80 wherein one of the layers is a connection-oriented layer (TCP is a connection-oriented layer, paragraph 0014) and the other layer is a connectionless layer (UDP is a connectionless layer, paragraph 0049).

Regarding claim 93, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 63 above, except fails to disclose the method of claim 63 further comprising decapsulating the received block of data at a first layer of a model describing the flow of data across a network and the decoder module decodes the received block of data at a second layer of the model. However, Alkhatib discloses encoding a data packet in a TCP segment and encapsulating IP packets using the UDP layer (first layer and second layer, paragraphs 0014, 0049). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Alkhatib in using TCP and UDP to decode and decapsulate packets, respectively such that the decoder module decodes at least one data block at a first layer of a model and the at least one extracted data block is decapsulated at a second layer of the model. The motivation to do so is to use TCP to handle flow control to make sure a faster sender cannot swamp a slow receiver and to use UDP to deliver prompt packet delivery.

Regarding claim 94, Alkhatib discloses the method of claim 93 wherein the first layer and the second layer are the same layer (TCP and UDP are at the same layer of the TCP/IP reference model, paragraphs 0014, 0049).

Regarding claim 95, Alkhatib discloses the method of claim 94 wherein one of the layers is a connection-oriented layer (TCP is a connection-oriented layer, paragraph 0014) and the other layer is a connectionless layer (UDP is a connectionless layer, paragraph 0049).

7. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seitz (USP 5,377,329) in view of Bueque (USP 6,490,356).

Regarding claim 44, Seitz discloses all the aspects of the claimed invention set forth in the rejection of claim 42 above. Seitz also discloses the system of claim 42 wherein the decoder module operates in a node in the network (a decoder node in a communication network, Fig. 2). Seitz does not explicitly disclose deciding a route for a decoded data block to its destination address. However, Bueque discloses a decoder comprises a routing means to route received data to a destined computer (col. 10, lines 48-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding method of Seitz with the teaching of Bueque in using a decoder to route decoded data to a destination such that the decoder decides a route for a decoded data block to its destination address. The motivation to do so is to permit the decoder to effectively identify messages intended for applications within the decoder and reject messages having another destination.

Allowable Subject Matter

8. Claims 17-23, 26-27, 37-41, 57-59, 60-62, 69-70, 77-79, 82-84, 90-92, 96 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 17, the system of claim 16 wherein the encoder module, responsive to a match in contents, associates the previously transmitted data block having the matching contents with the position in the least recently used data structure indicating the most recently used previously transmitted data block (when match is found, no new item is inserted and the previous transmitted data is still associated with the same sequence number, col. 2, lines 27-37, col. 4, lines 1-6).

In claim 18, the system of claim 16 wherein the encoder module, responsive to no match between the contents of an extracted data block and the contents of one of the previously transmitted data blocks, storing the extracted data block in the least recently used data structure (when no match, the input data is a new item to be inserted into cache), and associating the position of most recently used with the extracted data block (associate the new item with a new sequence number, col. 4, lines 1-6).

In claim 26, the system of claim 25 wherein the computed signature value is less than the number of hash table bins.

In claim 27, the system of claim 25 wherein the computed signature value is computed modulo the number of bins.

In claim 37, the system of claim 2 wherein the encoder module receives routing information over the network from each of one or more corresponding decoder modules with which it communicates and determines the one or more addresses supported by each respective decoder module from the routing information.

In claim 57, the system of claim 56 wherein the decoder module, responsive to a match in contents, associates the previously received data block having the matching contents with the position in the least recently used data structure indicating the most recently used previously received data block.

In claim 58, the system of claim 56 wherein the decoder module, responsive to no match in contents between the respective received data block and any one of the previously received data blocks, stores the respective received data block in the least recently used data structure, and associates the position of most recently used with the respective received data block.

In claim 60, the system of claim 56 further comprising a synchronization mechanism including a same size for the least recently used data structure as the size of a second least recently used data structure accessible by the corresponding encoder module that

transmitted the respective received data block, and a reliable network transport protocol being used for the transmission of the respective received data block.

In claim 61, the system of claim 56 further comprising a synchronization mechanism including a same size for the least recently used data structure as the size of a second least recently used data structure accessible by the corresponding encoder module, an indicator for each received data block indicating whether the received data block has been previously associated with the second least recently used data structure, and an installation acknowledgement transmitting by the decoder module to the corresponding encoder module responsive to an installation of each received block in the least recently used data structure.

In claim 62, the system of claim 56 further comprising a synchronization mechanism wherein the decoder module receives a version number of the previously received data block having the matching contents, the version number indicating how many times the identifier for this data block has been re-used.

In claim 69, the system of claim 42 wherein the decoder module transmits routing information for identifying one or more addresses it supports over the network to the corresponding encoder module.

In claim 77, the method of claim 76 further comprising, responsive to a match in contents, associating the previously transmitted data block having the matching contents with the position in the least recently used data structure indicating the most recently used previously transmitted data block.

In claim 78, the method of claim 76 further comprising, responsive to no match between the contents of an extracted data block and the contents pf one of the previously transmitted data blocks, storing the extracted data block in the least recently used data structure, and associating the position of most recently used with the extracted data block.

In claim 82, the method of claim 72 further comprising receiving routing information over the network from each of one or more corresponding decoder modules; and determining the one or more addresses supported by each respective decoder module from the routing information.

In claim 90, the method of claim 89 further comprising responsive to a match in contents, associates the previously received data block having the matching contents with the position in the least recently used data structure indicating the most recently used previously received data block.

In claim 91, the method of claim 89 further comprising responsive to no match in contents between the respective received data block and any one of the previously received

data blocks, storing the respective received data block in the least recently used data structure, and associating the position of most recently used with the respective received data block.

In claim 96, the method of claim 85 further comprising transmitting routing information for identifying one or more addresses it supports over the network to the corresponding encoder module.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 5,485,526 to Tobin

US Patent 5,903,230 to Masenas

US Patent 5,892,549 to Feng

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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